

REMARKS

In the Office Action, claims 1-38 were rejected. By the present Response, claim 35 is amended. Upon entry of the amendments, claims 1-38 remain pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

Rejections Under 35 U.S.C. § 102

In the Office Action, claims 35 and 37 were rejected under 35 U.S.C. § 102(e) as being anticipated by Kieffer et al., U.S. Patent Application No. 2004/0037392 (hereinafter "Kieffer"). Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. Applicants respectfully traverse this rejection and assert that the present invention, as recited in amended independent claim 35 is patentable over the Kieffer reference.

Independent claim 35 is amended to more clearly point out certain of the claimed subject matter. Specifically, the independent claim 35 now recites, a target being disposed within an X-ray bulb and rotating the target about an axis such that a varying portion of the target passes through a focal point of a focusing surface formed by a coating disposed on at least a part of a surface of an envelope of the X-ray bulb.

The Kieffer reference discloses a method of generating x-rays, comprising rotating a target 16 within an X-ray generation chamber 18, and focusing a laser beam 14 onto a focal point through which said target rotates. In addition, the Kieffer reference discloses moving the target between laser shots so as to expose a fresh surface of the target to each new laser shot. *However, Applicants respectfully submit that Kieffer fails to teach, disclose, or suggest an X-ray bulb of the type described in the present application. Further, Kieffer fails to teach, disclose, or suggest a focusing surface formed by a coating disposed on at least a part of a surface of an X-ray bulb envelope. See, Application, Figs. 4 and 5, and paragraphs 36-45.*

In particular, the Applicants respectfully refer the Examiner to the recent and legally controlling en banc decision *Phillips v. AWH Corp.* in which the Federal Circuit determined “the extent to which we should resort to and rely on a patent’s specification in seeking to ascertain the proper scope of its claims.” *Phillips v. AWH Corp.*, 75 U.S.P.Q.2d 1321, 1325 (Fed. Cir. 2005) (en banc). The Federal Circuit noted that the ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art at the time of the invention. *Id.* at 1326. A person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but also in the context of the entire patent, including the specification. *Id.*

In particular, the Federal Circuit noted that the claims must be read in view of the specification of which they are a part. *Id.* at 1327. The Federal Circuit noted that the specification is always highly relevant to claim construction, usually dispositive, and the single best guide to the meaning of a disputed term. *Id.* The Federal Circuit recognized that the Federal Circuit, its predecessors, and, indeed, even the Supreme Court, have “long emphasized the importance of the specification in claim construction.” *Id.* In possibly the best summary of the importance of the specification, the Federal Circuit relied upon the *Renishaw* decision, which states:

Ultimately, the interpretation to be given a term can only be determined and confirmed with full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.

Id. at 1328-29.

With this controlling precedent in mind, the Applicants respectfully submit that one of ordinary skill in the art would not read the relevant portions of the present specification, i.e., paragraphs 36-45 and the accompanying figures, and erroneously conclude that the X-ray generation chamber 18 disclosed in Kieffer was a bulb. Indeed, the Applicants respectfully submit that one of ordinary skill in the art under the guidance of the present application would find the Kieffer reference to be devoid of any teaching of an X-ray bulb.

In response to the Applicants' previous comments to this effect, the Examiner stated that: "Kieffer et al. discloses an evacuated chamber in which an x-ray source and target are disposed, in accordance with the accepted meaning of the term x-ray bulb, being synonymous with tube or envelope. As stated in Applicant's specification in Paragraph 37, the 'bulb' may be 'of a suitable shape,' and Applicant has not placed any criticality on any required shape for said bulb in the claim." Office Action, pp. 18-19. The Applicants take exception to these comments. In particular, the Examiner asserts that there is an "accepted meaning" of the term "X-ray bulb." The Applicants are unaware of any use of the term X-ray bulb outside the confines of the present Application and the Examiner has not cited any reference where the term is used. Therefore the Applicants respectfully insist that the Examiner provide support for the assertion the term "X-ray bulb" has an accepted meaning. Certainly none of the ten different references relied upon by the Examiner support the Examiner's position as none of the cited references use the term "X-ray bulb" in any manner.¹ The Applicants respectfully

¹ The Applicants note that the Hirano reference (U.S.P.N. 5,949,849) does discuss an X-ray tube 8 that includes a portion referred to as a bulb 9. Hirano, col. 3, lines 43-44. However, this bulb region of the X-ray tube of the Hirano reference is not an "X-ray bulb" as set forth in the specification of the present Application, nor does Hirano at any point refer to it as an "X-ray bulb." In particular, paragraph 45 of the present Application clearly distinguishes between use of the presently described X-ray bulbs and conventional X-ray tubes, such as that described by the Hirano reference. As set forth throughout the Application and as emphasized at paragraph 45, the present X-ray bulbs are a technology distinct from and used in place of X-ray tubes. To use a coincidental reference to a "bulb" portion of an X-ray tube in the Hirano reference as a teaching of an "X-ray bulb," contrary to the explicit teachings of the present Application noted above and contrary to the explicit guidance of the Federal Circuit as set forth in the *Phillips* case discussed above, is clearly improper.

contend that the concept of an "X-ray bulb" as used in the context of the present Application is novel and is unique to the present Application. If the Examiner disagrees, the Applicants respectfully request that the Examiner provide a reference that supports the Examiner's assertion that there is indeed an accepted meaning for the term "X-ray bulb" as it is used in the present Application.

Furthermore, the Applicants respectfully take exception to the Examiner's characterization that the term "X-ray bulb" is synonymous with a "tube" or "envelope." As noted above, the term "X-ray bulb" does not appear to have an accepted meaning and, therefore, cannot be synonymous with any other term based on such an accepted meaning. Indeed, the Examiner's assertion that the terms "envelope" and "tube" are synonymous with the term "X-ray bulb" appears to be in direct hostility with the Federal Circuit's *Phillips* decision discussed above. In particular, as set forth in the present claims (see, for example, claims 1, 11, and 35) and at paragraph 36 of the Application, the X-ray bulb comprises a bulb envelope, i.e., these are not the same item but the envelope is instead a *part* of the X-ray bulb. Likewise, paragraph 45 of the Application clearly distinguishes between the presently recited "X-ray bulbs" and conventional X-ray tubes. Any attempt by the Examiner to equate an "X-ray bulb" with an envelope or tube is clearly not reasonable in view of the teaching of the present Application. Therefore, as the Examiner's assertions that the term "X-ray bulb" has an accepted meaning and that the term is synonymous with the terms "envelope" and "bulb" appear to be entirely without merit, the Applicants once again reiterate that one of ordinary skill in the art with the benefit of the teachings of the present Application would not believe such an X-ray bulb to be present in the Kieffer reference, or in any other reference relied upon by the Examiner.

Furthermore, even if the Kieffer reference were by chance believed to disclose an X-ray bulb, the reference does not disclose a focusing surface formed by a coating disposed on a surface of the envelope of the X-ray bulb. At least because Kieffer does

not teach, disclose or suggest an X-ray bulb as claimed or the respective focusing surface formed by a coating, the reference cannot support a *prima facie* case of anticipation of claim 35. Claim 37 depends directly from claim 35. Accordingly, the Applicants submit that claim 37 is allowable by virtue of their dependency from an allowable base claim. Applicants also submit that the dependent claim is further allowable by virtue of the subject matter they separately recite. Thus, it is respectfully requested that the rejections of claims 35 and 37 under 35 U.S.C. §102(e) be withdrawn.

Rejections Under 35 U.S.C. § 103

Claim 38 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kieffer in view of Dafni et al., U.S. Patent No. 5,966,422 (hereinafter “Dafni”). Claims 1, 3-5, 7, 11, 19, 22, and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kieffer in view of Tillman et al. titled “Survival of Mammalian Cells Exposed to Ultrahigh Dose Rates from a Laser-produced Plasma X-ray Source” (hereinafter “Tillman”). Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kieffer in view of Tillman and further in view of Tsuno et al., U.S. Patent Application No. 2004/0246610 (hereinafter “Tsuno”). Claims 12-18, 23-34, and 38 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kieffer and Tillman and further in view of U.S. Patent No. 6,937, 689, attributed to Dafni by the Examiner, but actually to Zhao. Claims 2 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kieffer and Tillman and further in view of Ono et al., U.S. Patent No. 5,696,804 (hereinafter “Ono”). Claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kieffer and Tillman and further in view of Hirano et al., U.S. Patent No. 5,949,849 (hereinafter “Hirano”), and claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kieffer, Tillman in view of Nelson U.S. Patent No. 5,982,847 (hereinafter “Nelson”) and further in view of Benson et al., U.S. Patent No. 5,696,865 (hereinafter “Beeson”). Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kieffer and Tillman and further in view of Kondo et al., U.S. Patent No. 6,324,255 (hereinafter “Kondo”), and claim 21 was rejected under 35 U.S.C. § 103(a)

as being unpatentable over Kieffer and Tillman and further in view of Hunter et al. titled "Design and Characterization of a Laser-based Instrument to treat Hemangiomas Using Spectroscopic Feedback: The Smart Scalpel" (hereinafter "Hunter"). The Applicants respectfully traverse the present rejections under 35 U.S.C. § 103(a) and request reconsideration by the Examiner of the present claims so rejected.

As a preliminary matter, the Applicants respectfully note that the Examiner rejected claims 12-18, 23-34, and 38 under 35 U.S.C. § 103(a) in view of Kieffer, Tillman and U.S. Patent No. 6,937,689. The Examiner refers to the latter patent as to Dafni, a reference discussed elsewhere in the Office Action. The Applicants note, however, that the cited patent number corresponds to a patent to Zhao, not Dafni. In view of this discrepancy, the Applicants believe that the present rejection is deficient on its face. Clarification is respectfully requested in a forthcoming communication from the Examiner. Further, the Applicants believe that such a clarification should be in the form of a non-final Office Action, assuming the present claims are not found to be allowable in view of the present amendments and remarks, as the deficiency of the present rejection unduly prejudices the Applicants ability to meaningfully respond.

Applicants respectfully assert that the present invention, as recited in independent claims 1, 11, 23 and 28 is patentable over Kieffer, Tillman and other references, alone or in combination. As noted above, the Kieffer reference does not disclose an X-ray bulb as would be understood by one of ordinary skill in the art having the benefit of the present specification. In particular, the Kieffer reference does not disclose a bulb envelope or bulb coating as recited in the present claims so as to form a focusing surface. The Examiner acknowledges this and states that Kieffer fails to teach, disclose or suggest the generation chamber to have at least a partially rounded surface so as to comprise a bulb envelope. Additionally, the Examiner acknowledges that Kieffer fails to teach, disclose or suggest a bulb envelope having a coating on its curved surface so as to form a focusing surface for a laser.

The Examiner cites Tillman to obviate these deficiencies in the teaching of Kieffer. However, Tillman fails to obviate these deficiencies in the teachings of Kieffer. The Examiner states that "Tillman teaches a curved parabolic mirror surface disposed within the interior surface of an envelope of an X-ray generation apparatus to focus the laser onto target to produce x-rays." Clearly, such an internally disposed mirror is not the same as a curved and coated surface of the envelope itself that forms a focusing surface. The reference, therefore, does not teach or suggest a curved and coated surface of an X-ray bulb envelope that forms a focusing surface. Consequently, the combination of Kieffer and Tillman simply cannot suggest to one skilled in the art all of the recitations of claims 1, 11, 23, and 28.

Further, the Kieffer and Tillman references cannot be fairly combined as suggested by the Examiner. The Examiner states that "it would be obvious to one of ordinary skill in the art at the time of the invention to use the curved mirror surface of Tillman in the bulbous x-ray tube of Kieffer to reduce the number of parts required for focusing of the laser light." The motivation for the suggested combination proposed by the Examiner is not only entirely absent from either reference, it also appears to be entirely false. In particular, the Kieffer reference discloses an adjustable parabolic mirror 32 external to the chamber 18 that focuses the laser beam that enters the chamber 18. Kieffer, Fig. 1, paragraph 50. In other words, Kieffer provides for a parabolic mirror 32 to aim and focus the laser, the mirror, however, is external to the chamber 18. Merely moving that mirror into the chamber, as the Examiner appears to believe that Tillman teaches, in no way reduces the number of parts required to focus the laser, i.e., both references disclose the use of a parabolic mirror. Kieffer, paragraph 50; Tillman, description of Fig. 1. Therefore, the Examiner's motivation appears to be nonexistent. Both references disclose the use of a parabolic mirror to focus a laser, i.e., there is no reduction in the number of parts. Further, there is no reason provided by either reference to suggest that one location (inside or outside the target chamber) is preferable to the

other. Absent a meaningful motivation, of which none appears to be present, there is no reason to modify the Kieffer reference in the manner suggested by the Examiner. However, even if such a motivation were present, as noted above, simply moving the parabolic mirror of Kieffer to the interior of the target chamber *still* does not correspond to the recited focusing surface formed by a coating on a part of the surface of the envelope of the X-ray bulb, as generally recited in the present claims. Therefore, the combination of references relied upon by the Examiner does not disclose all of the recited elements of claims 1, 11, 23 and 28 or of those claims depending therefrom.


In view of the forgoing considerations, the Examiner has failed to establish a *prima facie* case of obviousness of claims 1, 11, 23 and 28. These claims, and the claims depending therefrom, are therefore believed to be patentable over the cited combination, and over combinations with the other secondary references. Thus, it is respectfully requested that the rejections of claims 1-34 under 35 U.S.C. §103(a) be withdrawn.

Conclusion

In view of the remarks set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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